PATENT

I hereby curtify that this correspondence is being deposited with the United States Postal Services on the date set forth below as First Class Mail in an envelope addressed (to: Commissioner for 변화tents, P. O. Box 2327, Arlington VA 22202.

Date of Signature

and Deposit:

Wietrzny, Attorney of Redord

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:

Thomas W. Rand, et al.

Application No.:

10/719,353

Filing Date:

November 21, 2003

Title:

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CLEAR ICE MAKING REFRIGERATOR

Group Art No:

3744

Examiner:

William E. Tapolcai

Confirmation No.:

3299

Atty. Docket No.:

920002.00005

Mail Stop Amendment Commissioner for Patents P. O. Box 2327 Arlington, VA 22202

DECLARATION

The undersigned hereby declare that:

- 1. They are the named inventors of the above-identified patent application.
- 2. They have been made aware of U.S. patent 6,679,073, originally filed March 14, 2003.
- 3. Pr or to March 14, 2003, at least one embodiment of each of the subject matter of claims: 1-4, 8-13, 15, 19 and 21-22 in the accompanying Amendment was actually reduced to practice in the United States by us and/or pursuant to our supervision.
 - 4. This is evidenced by, among other things,
- a. Exhibits A1 and A2 attached hereto include accurate copies of two documents procuced by employees of the assignee regarding the specifications of the clear ice making refrigerator. The originals of documents A1 and A2 from which the copies were made were prepared in the United States at least by November 27, 2001 and February 28, 2002, respectively.

* -

- b Exhibits B1-B3 attached hereto include accurate copies of drawings dated February 4, 2002 and prepared in the United States by inventor Joseph Zyduck no later than February 4, 2002 showing views of an embodiment of the clear ice making refrigerator. The drawings include at least one figure (B1) showing an assembly view of the refrigerator having a refrigerator compartment and a clear ice making compartment. The drawings also include at least one figure (E3) showing the clear ice making assembly in isolation.
- c. Exhibit C attached hereto is a copy of an internal e-mail from Inventor Andrew Doberstein dated October 9, 2002 stating that a prototype of clear ice making refrigerator was installed at a conference room in a facility of the assignee. The prototype was considered very close to a final production model.
- d Exhibits D1 and D2 attached hereto Include accurate copies of a data from tests conducted on one or more pre-production clear ice making refrigerators. Document D1 is a Test Unit Data Sheet dated July 3, 2001 summar zing cycle testing conducted within the United States by or under the supervision of inventor Andrew Doberstein. Document D2 is dated June 03, 2002 and shows cycle time data from tests conducted within the United States by or under the supervision of inventor Andrew Doberstein. We consider the testing associated with these exhibits to have been successful.
- e. Exhibits E1 and E2 attached hereto include accurate copies of documents pertaining to clear ice making refrigerator units subjected to fielding testing within the United States conducted under the direction of the undersigned. Exhibit E1 includes an internal e-mail from Inventor Thomas Rand dated January 15, 2003, which includes an attachment listing the serial numbers, locations; and ship dates of the various field tested units. All units having a December shipping or installation date (signified by "12/") were shipped or installed in December 2002 and all units having a January shipping or installation date (signified by "1/") were shipped or installed in January 2003. Exhibit E2 includes an e-mail to inventor Thomas Rand dated February 17, 2003, which

includes a completed field test report as an attachment. These units were final production models, and we considered all tests to have been successful.

5. The undersigned further declare that all statements made herein of their own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Further declarants sayeth not.

Dated: (/25/05

3.

Dated: 1/25/05

Dated: 12505

Respectfully submitted,

Thomas W. Kand

Andrew J. Deperstein

Joseph H. Zyduck

QBMKE\920002.000(15\5687236.1



U-Line Échelon CLR COMBO

Created: 11/26/01 Updated: 11/27/01

Model Number:

CLR COMBO2075

Type of Unit:

Clear Ice Maker / Refrigerator

Type of storage:

Ice / Beverage

Voltage:

110 volt

Overall size:

Same as 75 and 2075 series

Cabinet:

Same as Échelon design

Location of IM:

Right hand side - looking inside unit

Location of Ref:

Left hand side - looking inside unit

Ice Rate:

Same as CLR2060 if possible

Ice Storage Capacity: Maximize

Cubic Capacity:

Refrigeration- as close to 3.5 as possible (2.5 has been determined

maximum by engineering staff)

Door Front:

Identical to Échelon design

• Same gasket

• Same handles

• Same set of options, corrugated/vinyl, ¼" insert, SS,

overlay

Shelves:

4 shelves - Échelon design

In door storage:

Yes, similar to 2015 series

Crisper:

NO

Control/Display:

Digital display

Digital read out to include set point, actual temperature,

clean condenser light indicator

Applicant's **Exhibit**

• Unique bezel

Digital display/control location: TBD

Lighting:

Échelon design

Colors:

Black, White, and SS

Price Point:

\$1150 - 1190 Distributor Price

U-Line Customer Specification February 28, 2002 CLRCOMBO Quote 1

The following specification is for purposes of quoting the CLRCOMBO control board.

The following project specifications are as requested by Customer. Control Products accepts no responsibility in the development of custom specifications, or the lack of performance towards specifications that have not been formally approved.

Changes in the project specifications, once the project has been approved and the design process initiated, are subject to additional charge at \$60/hour.

The specifications listed below describe a custom control board.

The control must be designed so that it can be populated differently for the, CLRCOMBO

Open issues and questions are marked with TBD = To Be Determined.

- 1.0 Physical
 - 1.1 Bare circuit board dimensions TBD (as small as possible)
 - 1.2 Custom enclosures, mounting hardware, etc. are to be provided by U-Line
 - 1.3 Remote display module for CLR-combo TC-110 style enclosure (3 color overlay will be included) Remote display to be as thin as possible.
 - 1.4 Circuit board to be conformally coated with Silicon
 - 1.5 All inputs will use positive locking spade connectors unless otherwise requested.
- 2.0 Inputs
 - 2.1 Power
 - 2.1.1 120 VAC (+/- 20%) on-board transformer, 50/60 Hz
 - 2.2 Temperature sensors, thermister type sensors
 - 2.2.1 Space temperature sensor 1
 - 2.2.1.1 Used to control cabinet temperature for CLRCOMBO refrigerator
 - 2.2.1.2 3 foot sensor wire with nickel plated copper cap and female spade connector Sensor to be mounted in damp location
 - 2.2.3 Ice thickness sensor-location uncertain
 - 2.2.3.1 Used to determine length of freeze and harvest cycles

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- 2.2.3.2 3 foot sensor wire with nickel plated copper cap and female spade connector
- 2.2.4 Bin level temperature sensor
 - 2.2.4.1 3 foot bare sensor with female spade connector
- 2.2.5 Condenser sensor
 - 2.2.5.1 Used to determine when condenser needs to be cleaned
 - 2.2.5.2 3 foot sensor wire with nickel plated copper cap and female spade connector
- 2.3 Ice thickness timer potentiometer
 - 2.3.1 Used to control ice thickness
- 2.4 Waste water overflow sensor (provided by U-Line), .25" spade connectors

Board to have two ¼" male spade connectors

- 2.5 Make Ice/Clean selector switch input
 - 2.5.1 Off board switch provided by U-Line
 - 2.5.2 Selects between ice making function and clean cycle function (see section 5.0)
- 3.0 Outputs
 - 3.1 Compressor control relay
 - 3.1.1 10 Amp, SPDT at 120 Vac
 - 3.2 Fan relay
 - 3.2.1 10 Amp, SPDT at 120 Vac
 - 3.3 Water pump relay
 - 3.3.1 10 Amp, SPDT at 120 Vac
 - 3.4 Hot gas valve relay
 - 3.4.1 10 Amp, SPDT at 120 Vac
 - 3.5 Water inlet solenoid relay
 - 3.5.1 10 Amp, SPDT at 120 Vac
 - 3.6 Refrigerant valve / refrigerant bypass valve relay (CLR-combo and future models only)
 - 3.6.1 10 Amp, SPDT at 120 Vac

U-Line, Refrigeration Spec, Rev 6, 2/28/02

3.8.1 Power-red 3.8.2 Compressor relay-green 3.8.3 Fan relay-green 3.8.4 Water pump relay-green 3.8.5 Hot gas valve relay-green 3.8.6 Water inlet solenoid relay-green Refrigerant valve relay-green (CLR-combo and future models only) 3.8.7 Refrigerant bypass valve relay-green (CLR-combo and future models only) 3.8.8 Input/output display module (CLR-combo and future models only) 4.0 (TC-110 style enclosure to be connected by ribbon cable with communications and 24 Vac) LED display (3 character, 7 segment, .56", green) 4.1 Input micro switches (located on remote display module for CLR-combo and future models only) 4.2 Switch 1 (name of switch on graphic overlay TBD) 4.2.1 4.2.1.1 Press 1 to display temperature of refrigerated zone 1 (CLR-combo, future models) 4.2.1.2 Zone 1 inverted decimal LED will illuminate 4.2.1.3 Press 1 (up) to adjust temperature setpoint upward when in programming mode 4.2.2 Switch 2 (name of switch on graphic overlay TBD) 4.2.2.3 Press 2 (down) to adjust temperature setpoint downward when in programming mode Switch 3 (name of switch on graphic overlay TBD) 4.2.3 4.2.3.1 Press 3 (set) to enter programming mode (parameters TBD) 5.0 Operation Operation of CLRCOMBO TBD-this is the operation of the icemaker portion of the unit. The refrigerator will cycle per the cycle description sent earlier. Set selector to "Make Ice" position.

Diagnostics (single point LEDs to be illuminated when associated components are activated)

3.8

Apply power to unit.

U-Line, Refrigeration Spec, Rev 6, 2/28/02

Water fill solenoid relay will energize for 180 seconds.

After water fill solenoid relay is de-energized, compressor, fan, and water pump relays are energized until the end of the freeze cycle time is determined.

During freeze cycle, water inlet solenoid is energized at TBD interval(s) to prevent slushing during freeze sequence.

Once the end of the freeze cycle is determined, the hot gas valve relay is energized for TBD time. If end of freeze cycle is not sensed in TBD time, harvest cycle is automatically initiated. Ice making cycle is repeated until "bin full" signal is received from bin level sensor.

5.2 Clean cycle (CLR60, CLR-combo, future models)

Set selector to "Clean" position.

Customer to provide specific "Clean" cycle sequence.

After clean cycle is complete, ice machine is disabled until selector is set to "Make Ice" position.

5.3 Display module control sequence (CLR-combo and future models only)

Power up and ice making sequence is the same as section 5.1.

Press 1 on display module to display temperature of refrigerated zone 1.

Press 3 to enter programming mode.

Once in programming mode, press 1 (up) or 2 (down) to adjust temperature setpoint (tsp).

Press 1 to raise tsp, press 2 to lower tsp. in one-degree increments.

Other programmable parameters TBD.

If nothing is pressed for 20 seconds, controller reverts to normal operating mode.

Default display is temperature of refrigerated zone 1.

5.4 Clean condensor alert

When condensor temperature reaches TBD degrees F, (CLE or TBD) display will flash. Unit will continue to function normally.

Display will reset automatically once condensor temperature is restored to normal range.

6.0 Operating conditions

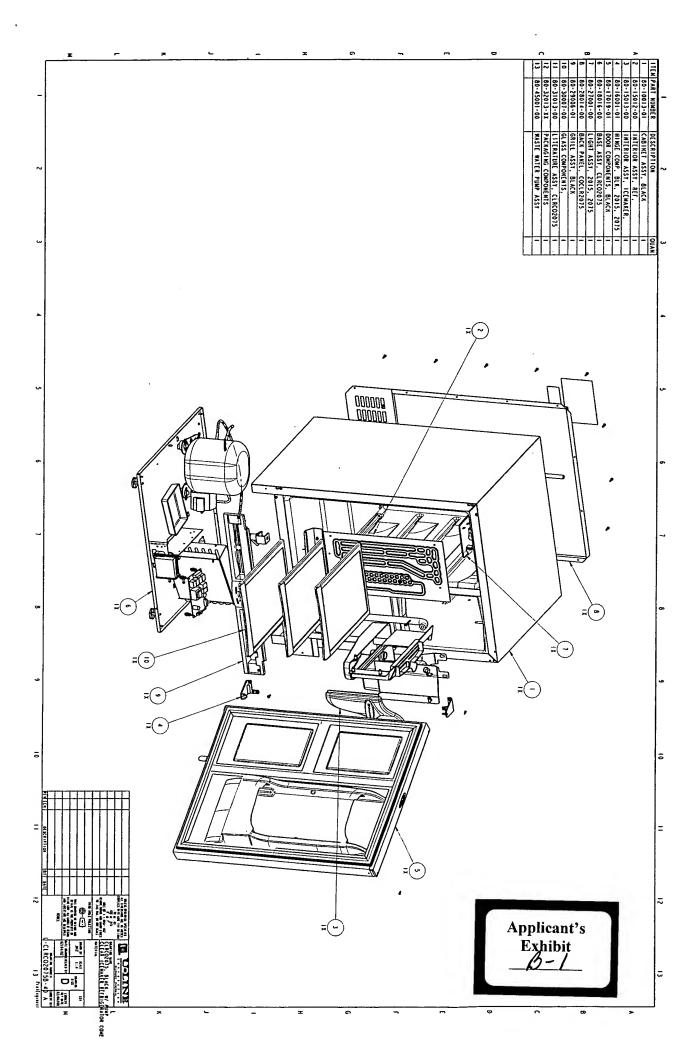
- 6.1 Ambient temperature range 35F to 158F with relative humidity up to 95% (non-condensing).
- 6.2 Control board will be conformal coated.

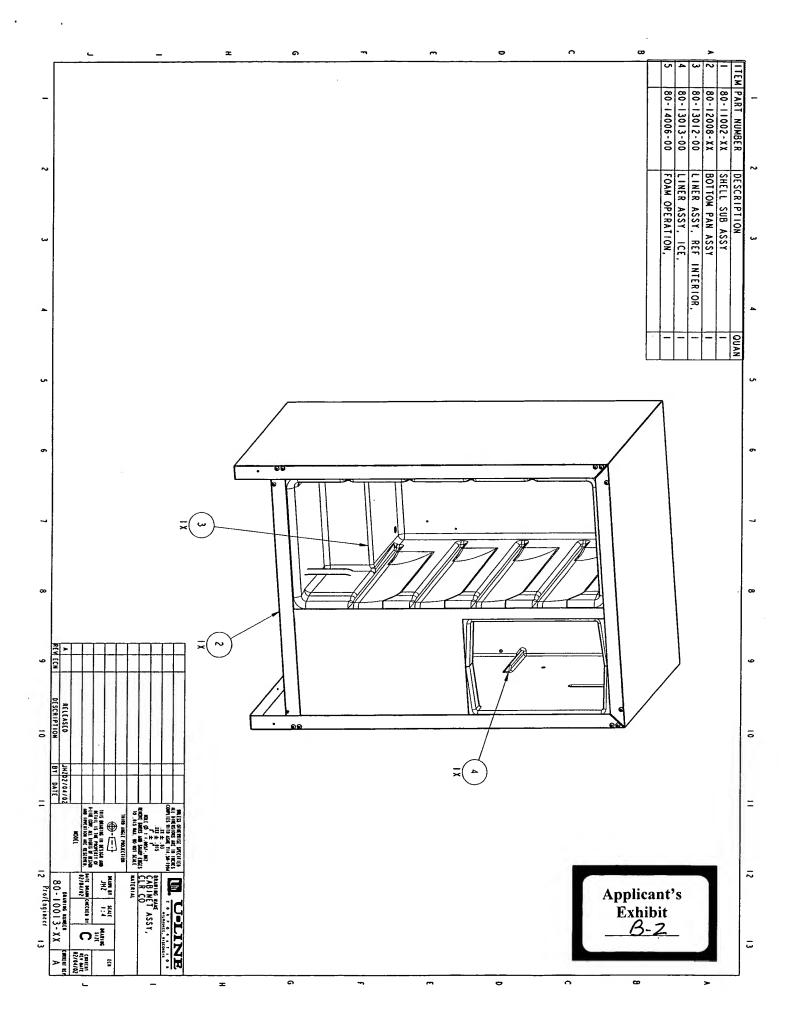
7.0 Agency approvals

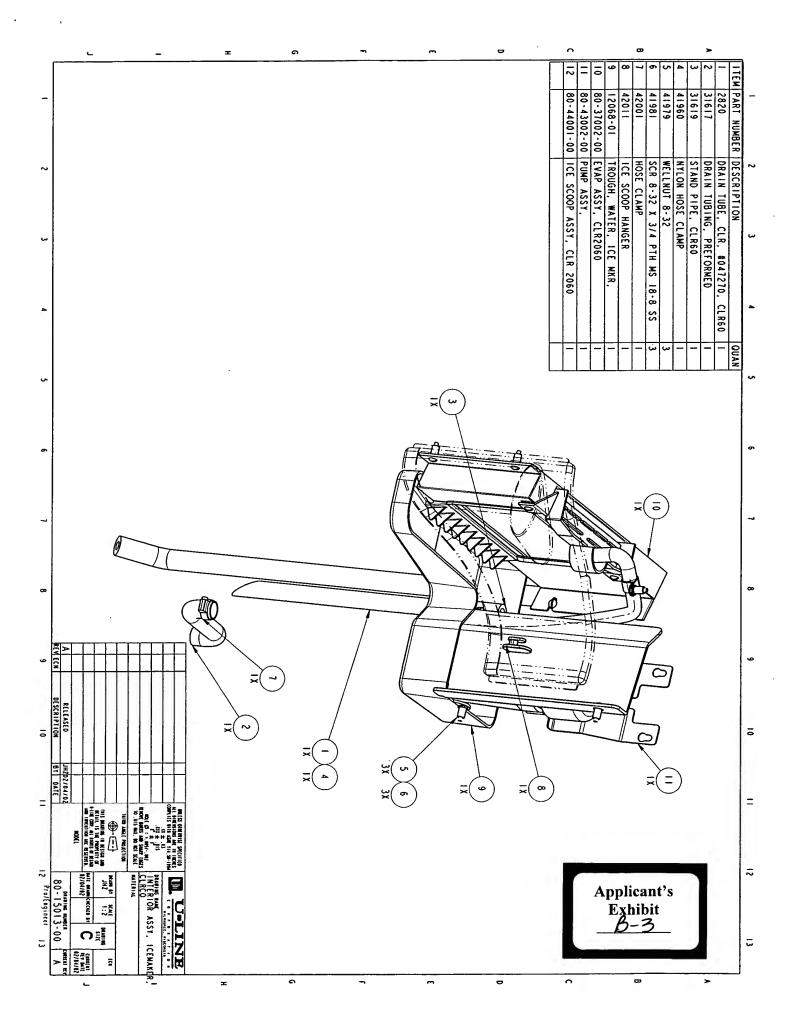
Unless otherwise specified, circuitry will be designed to meet UL Standard #873 Temperature Indicating and Regulating Equipment. Other UL, CUL, CE standards required must be specified by customer prior to initiation of design project. Changes in design standards or approvals will be subject to a price adjustment. The above procedures refer to adherence to the design standards and does not include formal agency recognition of the circuit board. It also does not include end-product equipment design, agency approval or agency recognition. Obtaining UL, CUL and CE on this circuit board and the costs associated will be quoted separately by Control Products, Inc. These costs will be based on actual agency fees plus a 15% management fee by Control Products.

Control Products:	Date:
U-Line, Refrigeration Spec, Rev 6, 2/28/02	

U-Line:	Date:	
O Dillo.		







----Original Message----From: Doberstein, Andy

Sent: Wednesday, October 09, 2002 8:48 AM

To: Straszewski, Jennifer

Cc: Rand, Tom

Subject: CLRCOMBO

The CLRCOMBO is installed in the upstairs conference room. The unit is still a prototype and does not have all the final revisions, but it is very close to final production. A few things to be reminded of:

- 1. The controller is displaying the actual temperature reading in the cabinet with no averaging features-it may fluctuate more than desired. The pilot run will display setpoint and allow limited access to viewing the exact temperature.
- 2. The icemaker will only begin a cycle if the refrigerator is at or below 42 degrees (except during the initial startup). This means that after the first icemaking cycle is completed another icemaking cycle will not begin until the refrigerator has reached 42 degrees-this may take 1 to 2 hours. This also means that the icemaker does not always make ice when the bin is empty. During a period of heavy usage the refrigerator will have priority over icemaking.
- 3. The controller has additional features that are accessible for this prototype stage. Please refrain from adjusting the thermostat unless you are sure what you are doing.

If you notice any problems with this unit please notify me as soon as possible so that we can get them corrected.

Thanks, Andy





TEST UNIT DATA SHEET

MODEL:

CLEAR IM AND 15 R COMBO

SERIAL #:

NONE

TESTED BY:

AJD

DATE:

July 3, 2001

CONSTRUCTION: Two 15 cabinets/ one refrigeration

system

Clr 60 wiring and refrigeration

system

Condenser fan moved to compressor cirucuit-on during

ice harvest

Additional double throw control added to control two refrigerant valves

Double throw control also adds second power feed to compressor and condenser fan motor for refrigeration only cycle. Ice production

Im cycle length	16 min
Ref cab temp	. 44
D2	138
\$6	65

Storage

010.490	
D2	105
S6	60
Ref cab temp	38
On cycle	24 min
Off cycle	45 min

CLRCOMBO SP	ECIEICATION	
	I ECIFICATION	
TEMP ON CONDESER	TOTAL TIME	T. 45 OF
OUTLET SENSOR AT 4	TOTAL TIME	TIME OF
MINUTES INTO FREEZE	OF FREEZE	HARVEST
CYCLE	CYCLE	CYCLE
BELOW 65	8	1.35
65	8	1.35
66	8.4	1.38
67	8.8	1.41
68	9.2	1.44
69	9.6	1.47
70	10	1.5
71	10.4	1.53
72	10.8	1.56
73	11.2	1.59
74	11.6	1.62
75	12	1.65
76	12.4	1.68
77	12.8	1.71
78	13.2	1.74
79	13.6	1.77
80	14	1.8
81	14.4	1.83
82	14.8	1.86
83	15.2	1.89
84	15.6	1.92
85	16	1.95
86	16.4	1.98
87	16.8	2.01
88	17.2	2.04
89	17.6	2.07
90	18	2.1
91	18.4	2.13
92	18.8	2.16
93	19.2	2.19
94	19.6	2.22
95	20	2.25
96	20.4	2.28
97	20.8	2.31
98	21.2	2.34
99	21.6	2.37
100	22	2.4
101	22.4	2.43
102	22.8	2.46
103	23.2	2.49
104	23.6	2.52
105	24	2.55
106	24.4	2.58
107	24.8	2.61
108	25.2	2.64
109	25.6	2.67
110	26	2.7
111	26.4	2.73
112	26.8	2.76
113	27.2	2.79
114	27.6	2.82
115	28	2.85
116	28.4	2.88
117	28.8	2.91
118	29.2	2.94
119	29.2	2.97
120	30	3
		3
OVER 120	30	

Refrigerator setpoint 38 with 2F differential Defrost(refrigeration off) every 12 hours for 30 minutes

Specs for 1st sample boards AJD 06/03/2002



Wietrzny, Steven J.

From: Rand, Tom [tom.rand@U-Line.com]

Sent: Monday, January 24, 2005 10:49

To: Doberstein, Andy; Zyduck, Joe

Cc: Wietrzny, Steven J.

Subject: FW: CLR-Combo Field Test Unit

----Original Message-----

From: Rand, Tom

Sent: Wednesday, January 15, 2003 3:17 PM

To: Reed, William (Buz); Straszewski, Jennifer; Uihlein, Chip; Uihlein, Phil; Uihlein, Richard; Kwiatkowski, Rick

Cc: Engineering; Wischer, Keith **Subject:** CLR-Combo Field Test Unit

All CLR-Combo field test units are now delivered, and all installed except for two (table below). We are actively collecting data/feedback from the units - but so far nothing that extraordinary.

One of those two was at Control Products and developed a slight refrigeration leak and was returned to us. The leak was not related to shipping and appears to be an incomplete braze. We have repaired and will reship to them by the end of this week. QC and MFG are aware of this and are reviewing ways to check joints.

The unit that went to VA was missing some of the installation components. The components are there now, but the owner is not, it will probably be this weekend or next before it is up and running.

Shipping tests are complete (with foam insert) and that unit is on life test here. Most of the units shipped for field test have been shipped with cardboard inserts, and no skid or export crate, so we have even more confidence - especially since they were shipped individual LTL.

The Drawer Field test units have been delayed due to a couple of components, but we anticipate shipping/delivering the week of Jan 27th.

Tom

UL tests are complete and data all submitted. Controller UL is complete.



CLRCO TEST UNIT LOCATION	NOI						
MODEL	SERIAL LOCATION		PUMP	BUILTIN	BUILT IN INSTALL	LOCATION	SHIP
U-CLRCO2075FS-00	025226-12-0001 ENGINEERING TEST	RUNNING - IN LAB	Yes/No	Yes	Lab	Milwaukee	At U-Line
U-CLRCO2075FS-00	025226-12-0004 UL TEST	RUNNING - IN LAB	Yes/No	Yes/No	Lab	Milwaukee	At U-Line
U-CLRCO2075FS-00	025226-12-0005 ENGINEERING TEST	RUNNING - IN LAB	Yes/No	Yes/No	Lab	Milwaukee	At U-l ine
U-CLRCO2075FW-00	025227-12-0003 UL TEST/PERF TEST	RUNNING - IN LAB	Yes/No	Yes/No	i e	Milwankee	At It-line
U-CLRCO2075FB-40	025225-12-0005 DROP TEST	RUNNING - IN LAB	Yes	S	Lab	Milwaukee	At U-Line
U-CLRCO2075FB-40	025225-12-0001 UPSTAIRS COFFEE AREA	INSTALLED • Running (12/18)	Yes	Kes	Office	Milwaukee	At U-Line
U-CLRCO2075FB-40	025225-12-0003 OFFICE LUNCHROOM	INSTALLED - Running (12/18)	Yes	Yes	Lunchroom	unchroom Milwaukee	At U-Line
U-CLRCO2075FB-40	025225-12-0002 JOE SANDERS	INSTALLED - Running (1/13)	Yes	Yes	Breezeway	Dallas	1/30 or 1/31
U-CLRCO2075FB-00	025225-12-0004 RICH SHERIDAN	INSTALLED - Running (1/13)	Yes	Yes	Rec Room	Chicago	Deliver 1/13
U-CLRCO2075FB-40	025225-12-0006 MCCLOUD	INSTALLED - Running (1/14)	Yes	Yes	Rec Room		Deliver 1/14
U-CLRCO2075FS-00	025226-12-0002 BILL JOHNSTON	INSTALLED - Running (12/31)	8 2	ž	Outdoors	Coastal Florida	Will Ship12/19/2002
U-CLRCO2075FS-40	025226-12-0003 BARB ARMSTRONG	INSTALLED - Running (12/18)	Yes	Yes	Basement		Deliver 12-20
U-CLRCO2075FS-40	025226-12-0006 KEN COOK	INSTALLED - Running (1/8)	Yes	2	Lunchroom		Deliver 1/3
U-CLRCO2075FW-40	025227-12-0001 RON RAND	ARRIVED - AWAITING INSTALL	Yes	92	Basement	Virginia/DC	Will ship 12/20/2002
U-CLRCO2075FW-40	025227-12-0002 CONTROL PRODUCTS	INSTALLED - LEAK/ReShip	Yes	ટ	Office	Minnesota	Shipped 12/17/02

Wietrzny, Steven J.

From: Sent: Rand, Tom [tom.rand@U-Line.com] Monday, January 24, 2005 10:54 AM

To: Cc: Wietrzny, Steven J.

CC:

Doberstein, Andy; Zyduck, Joe

Subject:

FW: Field Test Report



----Original Message----

From: Rand, Tom

Sent: Monday, February 17, 2003 9:39 AM

To: Straszewski, Jennifer; Uihlein, Phil; Uihlein, Chip; Reed, William

(Buz)

Cc: Engineering; Wustrack, Judy; Wischer, Keith; Barna, Dave; Byczynski, Dean

Subject: Field Test Report

This is the field test report from my brother in Virginia, before he left for Saudi Arabia, it very similar to Rich Sheridan's and very positive. With respect to the door bouncing back open, these units were foamed in temporary wooden fixtures. Nothing unique to CLR-combo. The unit will continue to run and be used by his family while he is gone for the next several months. Prince Sultan Air Base which is his new address would provide quite a field test...

Tom -- I'm running out of time, but here are some quick answers to your questions. Hope they help. Thanks again for letting me test it! See you when I get back. Rat

Applicant's

Exhibit

E-2

Field Test Questions Clear Combo

Ice Cubes

- 1) The U-Line clear ice cubes have dimples due to the nature of the technology. We expect the dimples to be about 1/4" to 1/2" deep, and the bridges between the cubes to be 1/16" to 1/8" thick is this what you are seeing? Yes
- 2) Are the bridges breaking when the slabs fall?
 - a. If not, is it only the top layers that do not break apart? For the most part, they are
 - b. Do the cubes break apart easily with the scoop? Yes
- 3) Is your cube/dimple size consistent? Yes, very much so
- 4) Is there a lot of water evident on the cubes or on the ice bin? None
- 5) Does the cube bin ever stack too high or fall too low. We expect it maintain within about 2" above or below the sensor tube when left unused. Never too high or too low

Refrigerator Interior:

- 6) Are you satisfied with the temperature control? Haven't used it much, but it seems to work
- 7) What setting did you prefer to leave it on? 37
- 8) Do you ever have product freezing? Nope
- 9) Do you ever see excessive frost building up in the drain trough or on the cold plate in the back of the compartment? Nope
- 10) Do you ever see water on the shelves that appears to be coming off of the back wall? Nope

Controller:

- 11) How do you like the controller? OK
- 12) Was it easy to use? Very
- 13) Right now you have to hit set temp before and after changing temperature settings, in production it will only have to be hit prior to changing the setting. How do you feel about this? I like hitting it after setting because it makes me feel like I'm starting it
- 14) Did you ever check the actual refrigerator temperature? Nope
- 15) Were you satisfied by what you saw? N/A
- 16) Did you ever see any flashing LEDS Nope

Exterior:

- 17) Did the door close properly and consistently? Yes, but it bounces open if closed too hard
- 18) Was there any evidence of the gaskets loosening on the door Nope
- 19) Was there any moisture apparent on the exterior surfaces of the cabinet around the gaskets? None so far
- 20) How does the noise of this unit compare to any other refrigeration appliances? No noise that I can tell, except for when a tray of ice empties and the water runs briefly to fill up for the next one

General:

- 21) Is there anything you would like to tell U-Line about the unit that you think might improve it? I'm no engineer, but this thing works great I can't think of any changes to make it better
- 22) Did you have any questions regarding usage of the unit, that you think should be in the users guide to avoid unnecessary service calls? N/A
- 23) Did the unit ever behave erratically or appear to malfunction for a period off time? Not so far